

II. CLAIMS LISTING

1.-21. (Canceled)

22. (Currently amended) A method for disassembling a laser printer toner cartridge having adjoining sections joined at thermoplastic joining surfaces into cut sections comprising:

executing a set-up procedure comprising:

(a) providing a toner cartridge including electrical conductors passing very near to the joining surfaces of the adjoining sections, said joining surfaces comprising a plurality of [n] interface line segments, each of said [n] interface line segments having a thickness;

(b) providing a computer implemented laser cutting system including a computer, a laser adapted to project a laser beam, a rotation device positioned in an initial rotation device position and adapted to move in one dimension, and a moveably adjustable light path;

(c) determining the thickness of the thermoplastic material along each of [the n] said interface line segments;

(d) determining laser beam intensity and laser beam speed of travel along each of [the n] said interface line segments sufficient to cut through the thickness of the thermoplastic material along each of [the n] said interface line segments without impinging on any electrical conductor passing very near to the joining surfaces of adjoining sections;

(e) retaining the cartridge in the rotation device that is in the initial rotation device position;

(f) entering and storing into the computer data representative of the initial rotation device position;

(g) selecting an initial point of a selected line segment of [the n] said interface line segments;

(h) entering and storing into the computer instructions to position the movably adjustable light path to direct the laser beam onto the initial point on the selected line segment and to trace the selected line segment for a predetermined distance to a second point on the selected line segment to thereby define a laser beam path for the selected line segment;

(i) determining whether a change in position of the rotation device from the initial rotation device position is required to enable the predetermined distance of the selected line segment to be traced by the laser beam, and if so required, entering and storing into the computer (i) instructions to move the rotation device to a selected new rotation device position that will enable the predetermined distance of the selected line segment to be traced by the laser beam, (ii) the new rotation device position and (iii) when the rotation device is to be moved to the new rotation device position, and if not so required, proceeding to;

(j) entering and storing into the computer (i) instructions to project the laser beam along the selected line segment for the predetermined distance from the initial point to the second point, (ii) the laser beam path and (iii) the second point;

(k) entering and storing into the computer instructions for (i) speed of movement of the laser beam from the initial point to the second point and (ii) intensity of the laser beam to cut through the thermoplastic material from the initial point to the second point along the selected line segment;

(l) repeating steps (g) through (k) above for each of [the n] said interface line segments [for n-1 repetitions], wherein in [the] each [of the n-1 repetitions] subsequent repetition of steps (g) though (k) the second point becomes the initial point for the next repetition to complete the set up procedure;

executing a cutting procedure comprising:

(m) operating the laser, rotation device and movably adjustable light path to trace the laser beam at predetermined speeds and intensities for each of [the n] said interface line segments along each of the beam paths to cut through the cartridge along each such path without impinging on any electrical conductor passing very near to the joining surfaces of adjoining sections to cut the cartridge into cut sections; and, removing the cut sections from the rotation device.

23. (Previously presented) A method for disassembling a laser printer toner cartridge having adjoining sections joined at thermoplastic joining surfaces into cut sections comprising:

executing a set-up procedure comprising:

(a) providing a toner cartridge including electrical conductors passing very near to the joining surfaces of the adjoining sections, said joining surfaces comprising a plurality of interface line segments, each of said interface line segments having a thickness;

(b) providing a computer implemented laser cutting system including a computer, a laser adapted to project a laser beam, a rotation device positioned in an initial rotation device position, and a movably adjustable light path;

(c) determining the thickness of the thermoplastic material along each of the line segments;

(d) determining laser beam intensity and laser beam speed of travel along each of the line segments sufficient to cut through the thickness of the thermoplastic material along each of the line segments without impinging on any electrical conductor passing very near to the joining surfaces of adjoining sections;

(e) retaining the cartridge in the rotation device that is in the initial rotation device position;

(f) entering and storing into the computer data representative of the initial rotation device position;

- (g) selecting an initial point of a selected line segment of the line segments;
- (h) entering and storing into the computer instructions to position the movably adjustable light path to direct the laser beam onto the initial point on the selected line segment and to trace the selected line segment for a predetermined distance to a second point on the selected line segment to thereby define a laser beam path for the selected line segment;
- (i) determining whether a change in position of the rotation device from the initial rotation device position is required to enable the predetermined distance of the selected line segment to be traced by the laser beam, and if so required, entering and storing into the computer (i) instructions to move the rotation device to a selected new rotation device position that will enable the predetermined distance of the selected line segment to be traced by the laser beam, (ii) the new rotation device position and (iii) when the rotation device is to be moved to the new rotation device position, and if not so required, proceeding to;
- (j) entering and storing into the computer (i) instructions to project the laser beam along the selected line segment for the predetermined distance from the initial point to the second point, (ii) the laser beam path and (iii) the second point;
- (k) entering and storing into the computer instructions for (i) speed of movement of the laser beam from the initial point to the second point and (ii) intensity of the laser beam to cut through the thermoplastic material from the initial point to the second point along the selected line segment;
- (l) repeating steps (g) through (k) above for each of the line segments until all of the line segments have gone through the set-up procedure, wherein in the each of the repetitions of steps (g) though (k) the second point becomes the initial point for the next repetition to complete the set up procedure;

executing a cutting procedure comprising:

(m) operating the laser, rotation device and optical system to trace the laser beam at predetermined speeds and intensities for each of the line segments along each of the beam paths to cut through the cartridge along each such path without impinging on any electrical conductor passing very near to the joining surfaces of adjoining sections to cut the cartridge into cut sections; and,
removing the cut sections from the rotation device.